

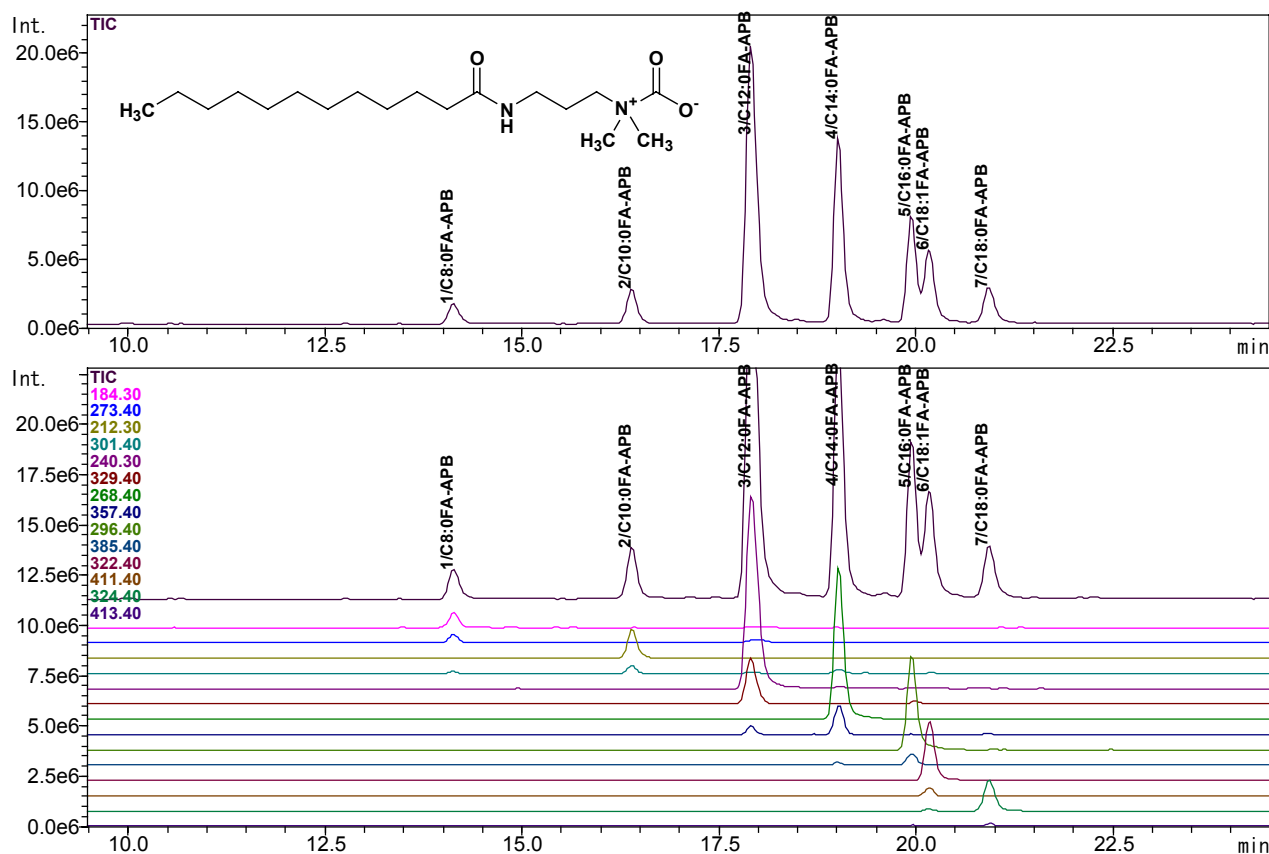
### Analysis of Amphoteric Surfactants using LC-MS

Surfactants are widely used in various industrial fields, including production of domestic synthetic detergents, owing to their ability to reduce surface tension. Nowadays, with the increasing awareness of environmental problems, concerns have been arising for the influence of surfactants contained in domestic and industrial wastewater on the environment and living organisms. Investigations are therefore being undertaken to monitor it.

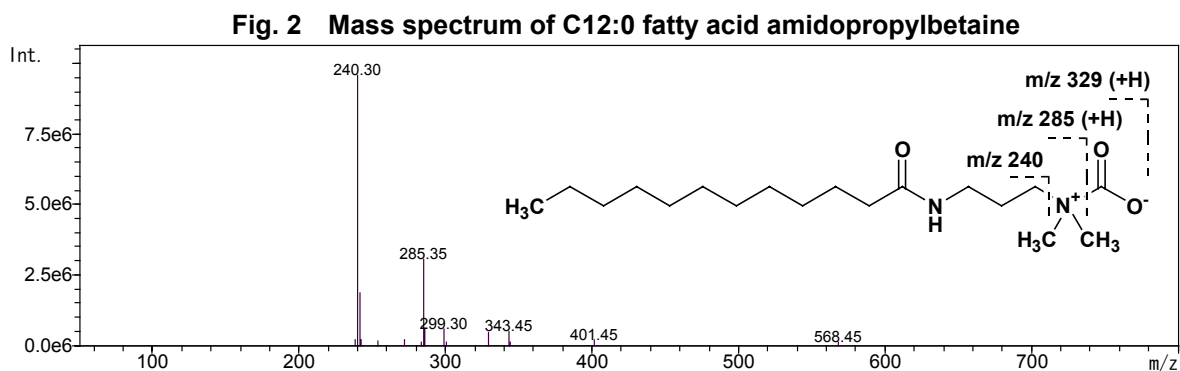
There are many types of surfactants such as anionic, cationic, and nonionic. Introduced here is an example of an

analysis of one of the amphoteric surfactants, fatty acid amidopropylbetaine.

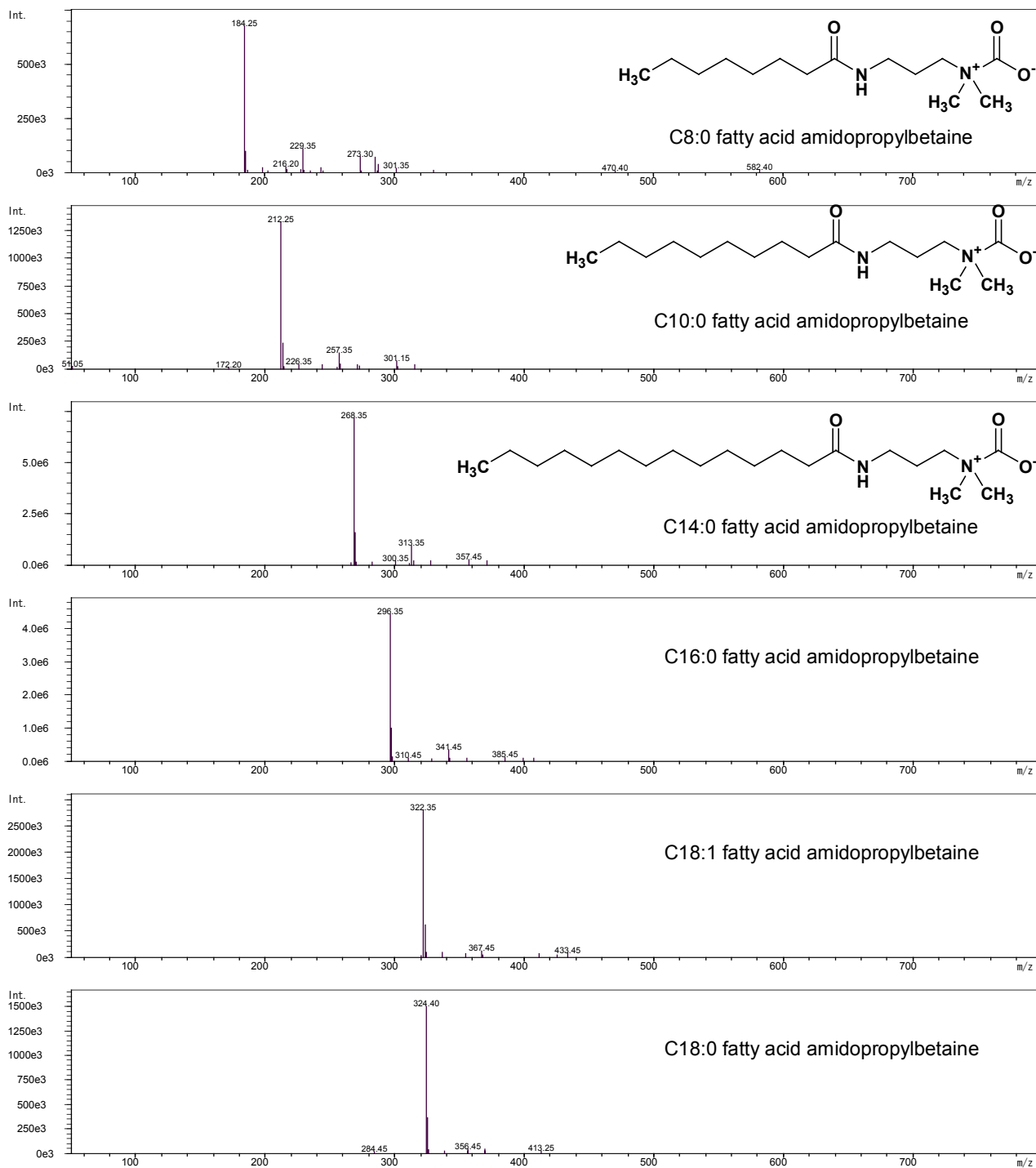
Fig.1 shows the mass chromatogram in the scan mode and Fig.2 shows the mass spectrum of C12:0 fatty acid amidopropylbetaine. Components in surfactants, which include substances with different carbon numbers, can be accurately identified and quantified by performing mass chromatography at a specific mass number. Fig.3 shows mass spectra from C8:0 to C18:0.



**Fig. 1 Mass chromatograms of fatty acid amidopropylbetaine**



**Fig. 2 Mass spectrum of C12:0 fatty acid amidopropylbetaine**



**Fig. 3 Mass spectra of fatty acid amidopropylbetaine**

**Table 1 Analytical conditions for LC-MS**

<b>Column</b>	: Shimadzu Shim-pack VP-ODS (2.0 mmI.D. x 150 mm)	
<b>Mobile phase A</b>	: water containing 0.2% acetic acid	
<b>Mobile phase B</b>	: methanol	
<b>Gradient program</b>	: 10% B – 100%B(15min) – 100%B(35min) – 10%B(35.01-45min)	
<b>Flow rate</b>	: 0.2 mL/min	
<b>Injection volume</b>	: 5 $\mu$ L	<b>Column temperature</b> : 40 degree C
<b>Probe voltage</b>	: +4.5 kV (APCI-Positive mode)	
<b>Probe temperature</b>	: 400 degree C	
<b>CDL temperature</b>	: 230 degree C	
<b>Nebulizing gas flow</b>	: 2.5 L/min	
<b>CDL voltage</b>	: -40 V	
<b>DEF's voltage</b>	: +37 V	
<b>Scan range</b>	: m/z 50 - 800 (1.5 sec/scan)	

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